International Journal Dental and Medical Sciences Research
Volume 5, Issue 6, Nov-Dec 2023 pp 449-455 www.ijdmsrjournal.com ISSN: 2582-6018

Importance of Sleep Medicine as an Integral Part of Dental Curriculum

Dr.Renuka Nagarale[1], Dr.Neetu Kadu[2], ShaherbanuAbbas Rampuri[3], Tahura Masroor Sayed[3], Sana Khan[3], Pooja Sabale[3]

[1]*Professor and Head of the Department, Department of Public Health Dentistry.*
[2]*Associate Professor, Department of Public Health Dentistry.*
[3]*Undergraduate, M. A. Rangoonwala College of Dental Sciences and Research Centre, Pune, India*

Date of Submission: 20-12-2023 Date of Acceptance: 30-12-2023

ABSTRACT:
Objective: In a significant study focused on integrating sleep medicine into dental curriculums, the emphasis was on enhancing students' understanding of treating sleep-related disorders. The study also aimed to assess the knowledge of sleep-related issues among dental graduates.
Methods: A cross-sectional conducting analytical studies to evaluate knowledge of dental sleep medicine. The data was collected using a self-administered structured online questionnaire which consisted demographic details, questions related to students interest in dental sleep medicine.
Results: In total of 200 responses 81% were undergraduates, 10% were postgraduates and 9% were professionals. It's encouraging to note that 81% of the participants expressed a keen interest in sleep medicine. This substantial percentage highlights a strong Inclination among the participants toward the field of sleep medicine within dentistry.
Conclusion: Dental graduates and professionals possess some knowledge regarding sleep medicine; however, it often falls short for effectively treating underlying causes of sleep-related disorders. Inclusion of dental sleep medicine within the dental curriculum is imperative due to its integral role in identifying and managing sleep-related disorders, enhancing comprehensive patient care.
KEYWORDS: Sleep Medicine, Dental Graduates, Dental Curriculum

I. INTRODUCTION

The discipline of dental sleep drugs entails the diagnosis and treatment of dental sleep diseases. In 2008, the American Academy of Dental Sleep Medicine formulated the following definition for this discipline:

"Dental sleep medicine is an area of dental practice that focuses on the use of oral appliance therapy to treat sleep-disordered breathing, including snoring and obstructive sleep apnea (OSA)." [1]

Still, since dental sleep drug involves further than sleep-related breathing diseases, in 2016, the following alternative definition was proposed:

"Dental Sleep Medicine is the discipline concerned with the study of the oral and maxillofacial causes and consequences of sleep-related problems." [2]

"Dental sleep drug" is a largely multidisciplinary field and demands a great deal of specialist medical knowledge, for illustration, in the fields of ear, nose and throat specialization, neurology, pulmonary conditions, internal drug and psychiatry. This challenging area is of particular interest to Oral and Maxillofacial (OMF) Surgeons, Orthodontists, Oral Medicine and Oral Pathology specialists, Orofacial Pain specialists and dentists specializing in dental sleep medicine, while medical croakers also need a broader knowledge of dental sleep drug to give the stylish possible patient care in interdisciplinary settings.

While the field of sleep-related disorders primarily falls within the realm of medicine, there's a relation with dentistry, particularly in regions where individualities routinely visit their dentist, similar as on a periodic base. Dentists can play a significant part in relating trouble factors or instantiations of specific sleep diseases within the oral and masticatory systems. They may contribute to the individual process through networks using questionnaires during regular dental check-ups. Also, dentists can be involved in the treatment of certain sleep disorders, either through direct intervention or in collaboration with general practitioners or medical specialists. It's noteworthy that treatments for some sleep diseases may have implications for oral health and the masticatory system. Consequently, Dental sleep diseases are sleep issues linked to dental problems or ones that can impact your dental health.

The high frequency of sleep disorders that affects all age groups has led to an abundant use of sleep medication. [3] There are over 80 different

International Journal Dental and Medical Sciences Research
Volume 5, Issue 6, Nov-Dec 2023 pp 449-455 www.ijdmsrjournal.com ISSN: 2582-6018

sleep diseases classified by the International Classification of Sleep Disorders-3 (ICSD-3), which can be diagnosed and treated effectively. [4]

These sleep disorders vary in their effect on the human body, generally performing in lower quality of life, morbidities, and indeed mortality. For illustration, obstructive sleep apnea (OSA), which is a common sleep problem affecting ~4% of middle-aged males, has been associated with several serious medical comorbidities similar as hypertension, coronary artery disease, stroke, and diabetes. Training and education in the field of sleep medicine are pivotal, as conditions similar as sleep apnea can be life threatening, if left undiagnosed. [4]

Dentists can potentially identify individuals at risk of developing obstructive sleep apnea (OSA) through careful examination during dental appointments or conventions. [5] [6] By assessing oral structures and identifying specific anatomical features such as enlarged tongue, tonsils, uvula, and soft palate, dentists may recognize signs that could indicate a higher risk for OSA.[7] Systemic conditions associated with obstructive sleep apnea (OSA) can indeed have an impact on other oral health issues such as dental caries and periodontitis. OSA has been linked to conditions like dry mouth (xerostomia), which can increase the risk of dental caries. Additionally, the presence of OSA-related systemic inflammation can potentially exacerbate periodontal problems by affecting the body's response to oral bacteria, leading to an increased risk of periodontitis. [8] Another equally important point is that the treatment of numerous OSA patients can be performed by dentists or dental specialists. The fabrication of oral appliances for mandibular advancement or performance of simple surgical procedures can affect in successful treatment of OSA cases. These signify the knowledge of sleep medicine to dentists and dental scholars. [9]

Multitudinous dental scholars don't admit enough training to identify and treat Obstructive Sleep Apnea (OSA). This is a common problem, and it's tough because it requires cooperation between dental faculty and sleep croakers. Overcoming these challenges might involve substantial advancements to the organizational structure of these institutions to more grease collaboration and interdisciplinary work in dental sleep medicine.

The Intention appears to estimate the current state of dental sleep medicine practice at academic institutions, assess the position of education and disquisition in this field, identify the challenges, and suggest strategies for improvement. The end is to bridge the gap in training and practice, potentially leading to the establishment of better dental sleep medicine practices in farther dental seminaries.

Potentially, this study may give information on the areas of improvement demanded as well as help in the development and performance of lower dental sleep medicine practices at academic institutions.

II. METHODOLOGY

Study was conducted among Dental Graduates and Professionals. The sampling method is convenience sampling method. Pilot study was conducted among 20 dental students to check reliability and validity of the questionnaire and also the sample size of the study, which comes around 187 (n= 187), 200 was decided the total sample size. Reliability of questionnaire was done using cronbach's alpha value determined by average of four evaluators which was found to be 0.604 (satisfactory) agreement between evaluators.

Formula for calculating Sample size is :

$$n = z\ 1\text{-}\alpha/2\ 2\ p(1\text{-}p)$$
$$D2$$

Where,

P = previous expected values

D =desired Margin of error

Z1-α/22 confidence interval

Data was collected through a structured questionnaire and was administered via face-to-face interviews, phone interviews, depending on participant preferences and accessibility. It is a type of questionnaire that consist of 28 multiple choice questions for assessment of knowledge, attitude and practice and their concerns for treating patient with knowledge of sleep medicine Questions will cover health history, current health status of patient, healthcare utilization and socio-demographic information.

Efforts will be made to maximize the response rate by implementing reminder strategies and reaching out to potential participants through various communication channels.

III. RESULT

The study was conducted among 200 participants. All participants were Dental Graduates in which 73% (146 out of 200) were Female and 27% (54 out of 200) were Male. In our study It appears that the majority, 81% of the participants, were undergraduate dental students, while postgraduates made up 10% and professionals comprised 9% of the total participants in the study. With regard to interest, 162(81%) of sample

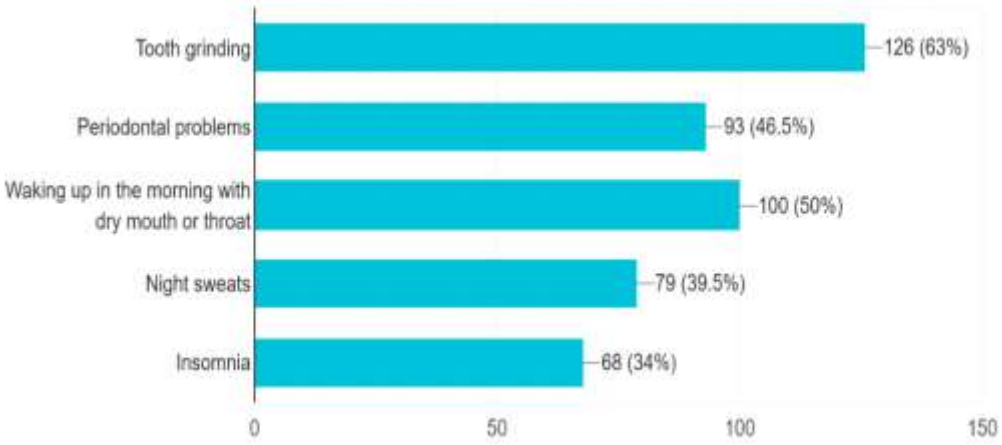
International Journal Dental and Medical Sciences Research
Volume 5, Issue 6, Nov-Dec 2023 pp 449-455 www.ijdmsrjournal.com ISSN: 2582-6018

express more interest in sleep medicine, it is highly probable that this is attributed to other factors than the sleep medicine education itself (Table 1) Table 1:

Parameters		Distribution	Frequency (n)/percentage (%)
Gender		Male	54(27%)
		Female	146(73%)
Education		Undergraduate	162(81%)
		Postgraduate	20(10%)
		Professionals	18(9%)
Interest in sleep medicine		Yes	162(81%)
		No	38(19%)

In our study, 37% of the participants reported having trouble sleeping, while the majority, comprising 63%, did not encounter such issues. Interestingly, a significant 62.5% of the participants stated that they knew someone dealing with sleep difficulties. This finding suggests a notable contrast between the proportion of individuals experiencing sleep problems personally and those who are familiar with others facing similar challenges. It indicates a prevalent awareness and connection to sleep issues among the surveyed group, despite a lower percentage reporting their own sleep troubles. In our study , it was found that a vast majority, totaling 91%, are familiar with the condition known as sleep apnea. Conversely, a smaller portion, comprising only 9%, indicated that they do not possess knowledge about this sleep disorder.

Among the participants we studied, 63% identified tooth grinding as a symptom associated with sleep apnea. About 46.5% believed that periodontal problems could also be indicative of this sleep disorder. Additionally, half of the respondents, totaling 50%, recognized waking up in the morning with a dry throat as a potential symptom of sleep apnea. A slightly smaller percentage, around 39.5%, suggested that experiencing night sweats could be linked to this condition. Lastly, 34% of the participants acknowledged insomnia as another symptom often associated with sleep apnea. These findings showcase varying levels of awareness among the surveyed individuals regarding different symptoms commonly associated with sleep apnea.(graph 1)



Graph 1: Symptoms associated with sleep medicine

In Our Study , 77% of participants demonstrated familiarity with sleep-related breathing disorders. Among these, 44.5% identified upper airway resistance syndrome as one type of such disorder, while 39% recognized obstructive sleep apnea as another variant. A smaller subset, approximately 16.5%, considered primary snoring as a type of sleep related breathing disorder(chart 1). Notably, an overwhelming majority of 91.5% were aware of obstructive sleep apnea specifically. Regarding symptoms associated with obstructive sleep apnea, 48.5% of respondents mentioned altered swallowing function, while a significant 81% identified snoring as a common symptom.

International Journal Dental and Medical Sciences Research
Volume 5, Issue 6, Nov-Dec 2023 pp 449-455 www.ijdmsrjournal.com ISSN: 2582-6018

Additionally, 24.5% suggested gasping, and a smaller fraction of 8.5% indicated mood disturbance as potential symptoms of this sleep disorder. These findings illustrate varying levels of awareness among participants concerning different types of sleep-related breathing disorders and their associated symptoms, particularly focusing on obstructive sleep apnea(OSA).(graph 2)

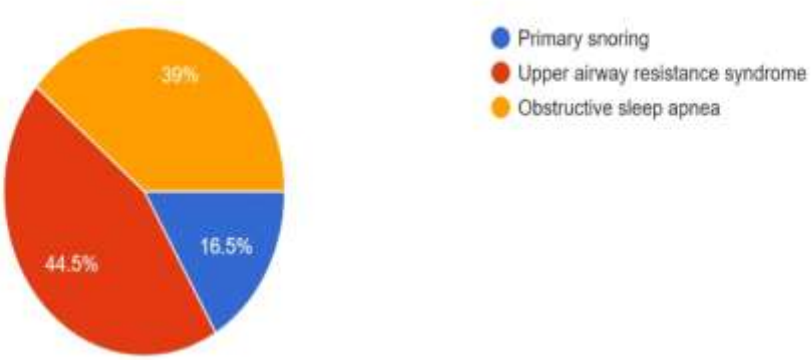
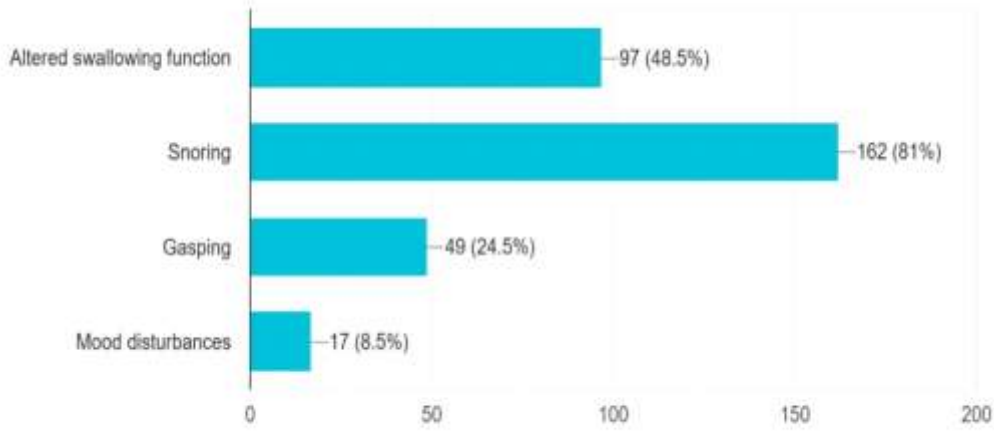


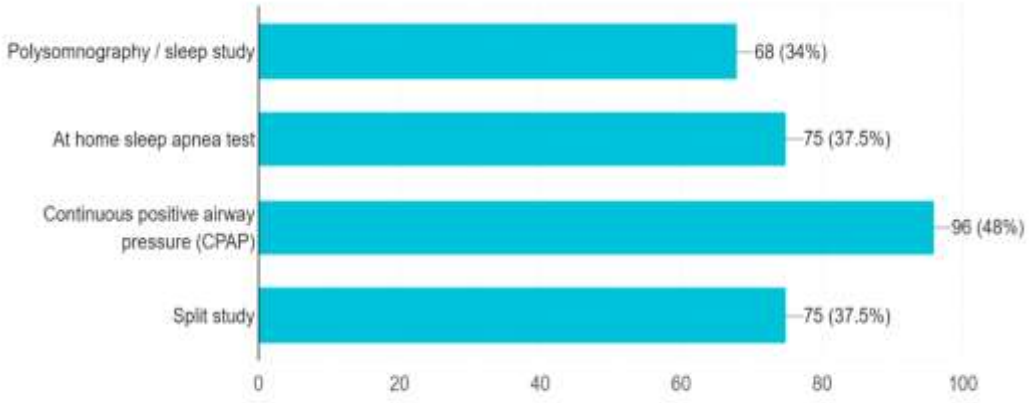
Chart 1: Symptoms of sleep related disorders



Graph 2: Symptoms Associated with Obstructive Sleep Apnea

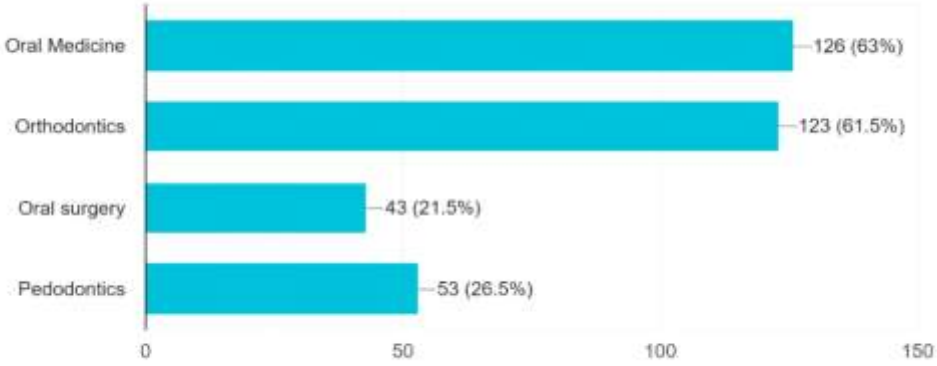
Among the participants surveyed, a mere 26.5% reported taking medication for sleep disorders. Within the dental graduate cohort, findings indicated that 45% were knowledgeable about sleep appliances utilized in treating sleep disorders, while a larger percentage, totaling 55%, remained unaware of such appliances. Regarding diagnostic tests for sleep apnea, 34% of participants recognized polysomnography or a sleep study as a suitable examination method. Similarly, 37.5% suggested the feasibility of an At-Home Sleep Apnea Test for diagnosis. Moreover, 48% of respondents highlighted Continuous Positive Airway Pressure (CPAP) as a diagnostic consideration, while an equivalent 37.5% mentioned a split study as another potential test for diagnosing sleep-related issues. These results underscore varying levels of awareness among participants regarding medication usage, knowledge about sleep appliances, and diagnostic tests available for sleep disorders, particularly emphasizing options for sleep apnea diagnosis.(graph 3)

International Journal Dental and Medical Sciences Research
Volume 5, Issue 6, Nov-Dec 2023 pp 449-455 www.ijdmsrjournal.com ISSN: 2582-6018



Graph 3: Diagnostic Test for Sleep Apnea

The study revealed that a significant majority, comprising 73% of participants, believe that dentists should have awareness of sleep medicine for addressing issues like snoring, obstructive sleep apnea (OSA), and sleep-related bruxism. Among these participants, 76.5% encountered sleep disorders in their patients, while 23.5% did not. Impressively, 88.5% are actively practicing sleep dentistry, and an overwhelming majority of 93% have heard about sleep medicine. Most participants, approximately 62%, gained knowledge about sleep medicine through articles, with 18% acquiring information from sleep medicine lectures or workshops, and 20% from friends. Moreover, a substantial 81% expressed interest in sleep medicine. When considering challenges in incorporating sleep medicine into the curriculum, 77% highlighted the lack of faculty expertise as an obstacle, followed by 49% attributing the issue to low priority, and 39% pointing to time constraints. Regarding the perceived association of sleep medicine within dentistry, 63% of participants link it closely with oral medicine, while 61.5% associate it with orthodontics. A smaller fraction, approximately 21.5%, believes oral surgery to be related, and only 26.5% associate sleep medicine with pedodontics. These findings reflect the attitudes, experiences, and perceived obstacles related to sleep medicine among the participants, along with their perspectives on its incorporation within dental practices and education.(Graph 4)



Graph 4: Departments associated with sleep disorders

IV. DISCUSSION

Dental Sleep Medicine is a crucial aspect of dentistry, especially for those dealing with sleep-related disorders that impact oral structures. Understanding these disorders and their connections to oral health enables dentists to offer treatments like oral appliances, addressing issues such as sleep apnea or bruxism, ultimately improving patients' overall health and well-being.

Several studies have indicated that there is no systematic method to improve clinician

practices and/or patient outcomes in dental sleep medicine.[10,11]

A study conducted In Saudi Arabia among specific medical schools found that the education regarding sleep medicine knowledge among medical students in those surveyed institutions is lacking (Almohaya et al., 2013).[3] Similarly, another study focusing on Middle Eastern universities reported that dental students in these institutions possess a low level of education in sleep medicine, consequently resulting in diminished knowledge (Talaat et al., 2016).[5] Therefore our study assesses the deficiency in knowledge among dental graduates, highlighting the necessity of incorporating dental sleep medicine into the curriculum.

Our study found that 37% of participants struggle with sleeping, while 25.5% experience medical conditions that disturb their sleep. Additionally, a significant 62.5% of participants are familiar with others facing similar issues. This data vividly illustrates the widespread presence of sleep-related disorders among people. It emphasizes the critical need to address these disorders through appropriate treatments, highlighting the importance of seeking effective solutions for better sleep and improved overall health.

The results from the Dental Sleep Research Society surveys conducted in 2009 and 2012 revealed a lack of separate administrative structures in academic institutions dedicated to dental sleep medicine practice. Consequently, dental sleep medicine clinics were found to be situated across different departments such as orofacial pain and temporomandibular disorder, as well as orthodontics. This indicates a dispersion of dental sleep medicine services within various departments rather than a concentrated or specialized administrative setup within academic institutions.[12]

In Our study 55% of participants are unaware of appliances used to treat sleep-related disorders, highlighting a significant lack of awareness regarding these treatment options. It's crucial for individuals to be informed about these appliances, as awareness plays a vital role in developing the best treatment plans for addressing sleep-related issues effectively. Raising awareness about these devices can greatly contribute to crafting more comprehensive and suitable treatment strategies for individuals suffering from sleep disorders.

According to our study, the majority (77%) of participants view the absence of faculty experts in sleep medicine as the primary obstacle in integrating sleep medicine into dental curriculum. Simultaneously, nearly half (49%) consider it a matter of low priority, while 39% identify time constraints as a challenge. However, the overarching issue highlighted by your research remains the unavailability of expert faculty in sleep medicine to provide essential instruction, signaling a crucial need for their inclusion in dental education programs.

In the present study, Dental Sleep medicine mostly discussed in Oral Medicine department (63%) and Orthodontics department (61.5%), while in another study conducted by Talaat et al, (2016) it is usually discussed in the orthodontic department (56%).[5]

Our findings indicate that while many participants possess some knowledge about sleep medicine, a considerable portion demonstrates limited understanding. This lack of comprehensive knowledge appears to stem from insufficient education and training provided during dental school. The results suggest a need for enhanced educational programs within dental schools to better equip future dentists with comprehensive knowledge and training in sleep medicine, enabling them to address sleep-related issues more effectively in their practice. Early diagnosis of patients with sleep disorders is very important in the success of treatment and positive outcome.[13,14]

V. CONCLUSION

Our study findings highlight a crucial need for integrating sleep medicine education into the dental curriculum. We discovered that dental graduates and professionals possess some knowledge regarding sleep medicine; however, it often falls short for effectively treating underlying causes of sleep-related disorders. As such, equipping these professionals with comprehensive knowledge in sleep medicine is imperative for addressing the root causes of such conditions. Incorporating sleep medicine into dental education would not only enhance their understanding but also significantly improve their ability to provide better treatment for sleep-related issues, ultimately benefitting patients seeking assistance in this domain.

REFERENCES

[1]. aadsm.org [homepage on the Internet]. About dental sleep medicine. Available from: https://www.aadsm.org/. Accessed December 2, 2020

[2]. Lobbezoo F, Aarab G, Wetselaar P, Hoekema A, de Lange J, de Vries N. A new definition of dental sleep medicine. J

Oral Rehabil. 2016;43:786–790. Doi:10.1111/joor.12421

[3]. Almohaya A, Qrmli A, Almagal N, et al. Sleep medicine education and knowledge among medical students in selected Saudi Medical Schools. BMC Med Educ 2013;13(1):133

[4]. Development of the ICSD. In: International classification of sleep disorders: Diagnostic and coding manual, 2nd edition. Westchester, IL: American Academy of Sleep Medicine; 2005:2–3

[5]. Talaat W, AlRozzi B, Kawas SA. Sleep medicine education and knowledge among undergraduate dental students in Middle East universities. Cranio 2016;34(3):163–168

[6]. Gungor AY, Turkkahraman H. Effects of airway problems on maxillary growth: a review. Eur J Dent 2009;3(3):250-254

[7]. Kurt G, Sisman C, Akin E, Akcam T. Cephalometric comparison of pharyngeal airway in snoring and non-snoring patients. Eur J Dent 2011;5(1):84– 88

[8]. Kale SS, Kakodkar P, Shetiya SH. Assessment of oral findings of dental patients who screen high and no risk for obstructive sleep apnea (OSA) reporting to a dental college – a cross sectional study. Sleep Sci 2018;11(2):112–117

[9]. Petrou-Amerikanou C, Belazi MA, Daskalopoulou E, Vlachoyiannis E, Daniilidou NV, Papanayiotou PC. Oral findings in patients with obstructive sleep apnea syndrome. Quintessence Int 2005;36(4):293–298

[10]. Loube MD, Strauss AM. Survey of oral appliance practice among dentist treating obstructive sleep apnea patients. Chest. 1997;111(2):382-386.

[11]. Simmons MS, Pullinger A. Education in sleep disorders in U.S. dental schools' DDS programs. Sleep Breath. 2012;16(2):383-392.

[12]. Mesarwi O, Polak J, Jun J, Polotsky VY. Sleep disorders and the development of insulin resistance and obesity. EndocrinolMetabClin North Am. 2013;42(3):617-634.

[13]. Development of the ICSD. In: International classification of sleep disorders: Diagnostic and coding manual, 2nd edition. Westchester, IL: American Academy of Sleep Medicine; 2005:2–3

[14]. Zozula R, Bodow M, Yatcilla D, Cody R, Rosen RC. Development of a brief, self-administered instrument for assessing sleep knowledge in medical education: "the ASKME Survey." Sleep 2001;24(2):227–233